

Реторика и аргументация
Rhetoric and Argumentation

**Efficacy Study for Co-Teaching in Practices
in Rhetoric and Natural Sciences**

DOI 10.55206/XTKK6295

Ulrike Nespital

Justus Liebig University Giessen, CentreCompetence Development (ZfbK)

E-mail: ulrike.nespital@zfbk.uni-giessen.de

Christian Heiliger

Justus Liebig University Giessen, Institute for Theoretical Physics

E-mail: christian.heiliger@physik.uni-giessen.de

Abstract: This study examines the effectiveness of the co-teaching practices for Scientific Presentations in the study programmes physics and material science at the Centre for Competence Development (ZfbK) at the Justus Liebig University Giessen. These practices focus on the link between subject-specific and speech science teaching content. The 40 students were required to investigate a current research topic in the field of physics or material science and then hold two presentations on this topic that had been recorded on video. In addition to the supervision provided by researchers from the natural sciences, the students participated in rhetorical training in which the focus was on the importance of self-perception and external perception when giving presentations. Each student received feedback on their speaking skills and the content they presented, as well as feedback on their video recordings. On the basis of questionnaires on speaking skills and a fear of speaking in public, as well as evaluations of the presentations completed by internal and external examiners (researchers from the natural sciences and speech scientists), it was possible to show in a pre- and post-comparison that students significantly improved their presentation skills (self-assessment: $p = 0.01$; external evaluation: $p < 0.05$). The results of the questionnaire of Speech anxiety was not significant ($p = 0.07$).

Keywords: rhetoric, natural sciences, teaching practices, co-teaching, effectiveness.

1. Introduction and theoretical background

The skill of presenting is a key competence in many different circumstances. This is true for academia as well as in economy. Furthermore, it is also important for almost all subjects. Thereby, it cannot be assumed that university students have presentation skills to begin with or that they will acquire auto-

matically as a key competence during the course of their studies. Though, surely, this also depends on their field of study. In this study we focus on the degree course natural sciences but our arguments can be equally applied to other subjects. Even though presentations are obligatory at a university, students seldom learn in their seminars what makes for a good presentation and how this style can be put into practice. Feuerbacher describes this as follows:

In Germany (apart from a few praiseworthy exceptions) at most, only a few presentations must be held in obligatory seminars, which place most of the importance on the content, but little on the form of the presentation. Correspondingly, the results are often bleak, especially when presenters are at an international conference and are additionally burdened by the use of the foreign language (Feuerbacher 2013). [1] This statement is most likely true for other countries as well. According to Feuerbacher, acquiring a confident and rhetorically good presentation manner in a self-learning process is almost impossible. During specialist lectures, there are no high expectations held by the audience, so that the basic techniques for a scientific presentation can be learned and therefore, a “poor” way of speaking at upcoming scientific congresses can be avoided (Feuerbacher 2013). [2] For Ebel and Bliefert (2005) communication for natural scientists plays a central and important role. ‘A scientific presentation is a communication product where the packaging is more important than the content’. [3] When using the term ‘packaging’ Ebel and Bliefert refer to the way in which the presentation is carried out. This includes the way of speaking with all rhetoric criteria that are essential for a good presentation. Also, Edwards (2007) emphasizes that beside content (information relevant to the audience), structure (logical beginning, middle, end), and human element (a presentation that is easy to remember) packaging plays an important part: ‘It must be well prepared. A report can be reread and portions skipped over, but with a presentation, the audience is at the mercy of a presenter.’ [4] Further, Ebel and Bliefert (2005) [5] suggest using the method of ‘thinking in pictures’ as a key element in presentations – meaning that most humans respond well to simple pictures to describe rather complex situations. In addition, they describe the exchange of information as a physical model that is comprised of ‘communicating vessels’ in order to exemplify the communication model of the target group of natural scientists. However, this means that the audience consists of rather passive listeners. In contradiction to this, in constructivist theories of learning (Piaget 1980) [6] ‘the theory suggests that humans construct knowledge and meaning from their experiences’. (Bada 2015) [7] The idea is that the audience is involved during the presentation by actively thinking. Here, we want to distinguish between learning to give a good scientific presentation and the presentation itself. For the latter, the circumstances are important. If it is a presentation at a scientific conference or at an advertising event for customers, Ebel and Bliefert’s approach (2005) [8] might be suitable. That is to transport the

main message to the audience by using simple pictures. The situation is quite different if the presentation is meant for courses at universities or student summer camps. In these cases, it is important to give guidance to actively think about the presented content. In summary, a good presentation must cater to the intended audience.

But how can university students learn to give a good presentation? There are several important aspects. In the following we are focusing on those that fall into the category of rhetoric. One main issue are possible speech anxieties and the fear of speaking in public. Thus, gaining confidence in giving academic presentations and speaking in public as part of the key competences taught in a course can be an opportunity for students to gain self-confidence in presenting and to reduce possible speech anxiety or fear of speaking in public. Here, self-efficacy beliefs, which form the core of Social Cognitive Theory (SCT) according to Bandura (1977, 1995, 1997) [9] also play a decisive role. Self-efficacy beliefs refer to the personal belief in being able to perform an action successfully, for example in difficult situations such as when speaking in public.

‘People who believe they can exercise control over threats do not conjure up disturbing thought patterns. But they who believe they cannot manage threats experience high anxiety arousal. They dwell on their coping deficiencies.’ (Bandura 1993) [10]

Speech anxiety can manifest through physical symptoms such as shaking, an impaired voice or speech- and language-related mistakes (Tarr-Krüger 1993) [11], as well as cognitive symptoms such as thinking about failing (Beushausen 2017). [12]. For many students speaking in front of an audience is associated with a strong sense of nervousness and self-doubt, which can influence their performance and lead to negative consequences such as poor grades or avoidance behaviour (Goberman et al. 2011). [13] According to Daly et al. (1995) [14] students who have a fear of speaking are at a disadvantage and less likely to give a high-quality presentation. The results of the Chemers and Garcia study (2001) [15] show that self-efficacy in academic contexts has a positive impact on performance and the constructive handling of stress.

Beside regular practising students need constructive feedbacks in order to improve their abilities and to overcome possible speech anxiety. Feedback can occur in various circumstances. A video recording, a photograph, a mirror reflection, as well as people in communicative situations can give their counterpart an intentional or unintentional feedback through their reactions. According to Slembek and Geissner (2001) the latter constitutes feedback in form of a communicative reaction. [16] ‘This does not mean absolute truths, but rather individual information about a person, how their communication behaviour affects others and which impression they leave on those who listen to them and on partners in a conversation’ (Wagner 2004). [17] Therefore, feedback refers to the subjective effect of a preceded message. It can happen in an explicit (controlled)

or implicit (uncontrolled) manner, whereby the latter refers to the non-verbal body language communication of an individual. The explicit feedback is differentiated between spontaneous and criteria-led feedback (Meyer 2013). [18]

To which extent self-perception corresponds or diverges from external perception has been repeatedly discussed. The question whether or not the self-perception of one's skills can be objectively confirmed plays a central role. This includes the questions asking for the requirements that therefore must be met and for the objective observation of self-perception as a realistic and objective fact.

In his scientific work 'Das Konzept von der eigenen Begabung' (The Concept of One's Own Ability), the Psychology professor Wulf-Uwe Meyer compares different theories. (Meyer 1984) [19]. According to Festinger (1954) [20], humans instinctively want to evaluate their own capabilities. This happens in comparison with peers as well as by testing these capabilities in reality. According to this theory, a close connection between the subjective self-assessment of skills and actual skills can be expected (Meyer 1984) [21], Jones (1973) [22] and Shrauger (1975) [23] state that humans strive for a positive and less realistic self-perception. Shrauger's 'Self-Appreciation theory' states that individuals who rate themselves poorly have a greater need to increase their self-worth. In order to reach an increase, negative information and feedback concerning their own capabilities is ignored and avoided. The focus of the individual is laid on the positive information. Successes are thus attributed to subjective factors and failures to objective factors. This results in a self-assessment that is classified as unrealistic (Meyer 1984). [24]

One of the first empirical studies on the connection between self-perception and external perception was provided by Arsenian (1942). [25] He examined the frequency in over- and underestimation of capabilities in an English language test in 120 new college students. It turned out that 62 percent of the participants overestimated, and 32 percent underestimated their abilities. Further, it was proven that the capabilities were more realistically assessed after the test than before the test (Meyer 1984). [26] Other studies such as Mabe and West (1982) [27] gave similar results. This study found an average correlation between self-assessment and actual skills. Additionally, the conditions for a high correlation were determined. Hereby it was found that given criteria heighten the realistic assessment of self-perception. Furthermore, the participants could give a more realistic assessment of their capabilities when they were asked to evaluate them on a scale from below average to above average and consequently carry out a relative assessment in a social comparison. Further conditions for a realistic assessment were the awareness of one's own achievements as well as anonymous capability assessment (Meyer 1984). [28] Meyer states that the individual's own assessment of their capability is more realistic when these conditions are met. This increases the certainty that 'the existing view of oneself is correct' (Meyer 1984). [29] According to Meyer, the individual expectation of effectiveness as well as the

individual degree of the intrinsic motivation concerning the subjective probability of success and the extent of the positive and negative assessment, are crucial factors.

‘Furthermore, the assessment of capability when analysing test anxiety and speech anxiety have become more important. Because perceptions of one’s own inability lead to the apprehension of not being able to meet the requirements for a task or a situation.’ (Meyer 1984). [30]

A new study by Jessie Sun and Simine Vazire from the University of California shows that 434 surveyed students mostly gave a good assessment of their own extroverted or conscientious behaviour, but less so in regard to their own emotional state.

‘Thus, it was likely more difficult for participants to detect the relatively narrow fluctuations in their own agreeableness states compared to, for example, detecting the larger fluctuations in their own extraversion states.’ (Sun & Vazire 2019). [31]

An important way to obtain an objective feedback is by using video feedback as a tool. The combination of a video feedback and observer feedback is effective because the individual has the opportunity to watch the footage and reflect on their performance, in case they receive feedback that makes them uncertain. The combination of both forms of feedback enables a complex and profound discussion that can result in considerable learning success with regard to speaking skills. ‘Videos combine the development of skills of perception and analysis with the discussion of changes on the action level’ (Trautmann & Sacher 2010). [32]

All of the rhetoric aspects mentioned so far could be taught in specialised rhetoric lectures. However, drawbacks of such lectures are that they are not embedded in the student’s scientific field and that there is typically no time for such lectures in the curricula. The latter holds particularly true for natural sciences where there is a large number of technical skills that must be taught.

Consequently, an approach to this situation is the combination of two worlds: the understanding of contemporary scientific research results in the areas of natural sciences, as well as a spoken presentation. Hereby, students gain insight into the research of respective working groups at their institution and are simultaneously trained in rhetoric. In order to cover both areas equally, students will be supervised by two lecturers from the fields of both natural sciences and humanities. Thus, the idea is to implement a co-teaching concept because the two lectures are from different subjects. Craig describes co-teaching in the content of integrating academic writing in English as a foreign language (EFL)/English as a second language (ESL):

‘In this model, both the disciplinary and EFL/ESL teacher respond to the student writing (or oral presentation), although they represent different perspectives. [...] The benefits of the fully integrated model are that students take their

communication assignments more seriously, since the work they are doing is authentic to the discipline and they perceive this work as adding directly to their professional skills.’ (Craig 2013). [33]

Sometimes such a concept is also referred to as team-teaching (Siebert 1997). [34] However, team-teaching is sometimes used for two lectures from the same subject. This interlocking is intended to achieve a greater learning success rhetorically and within the student’s respective field of study. This combined teaching of subject specific and non-subject-specific skills in certain teaching-learning contexts has a positive influence on the learning success of the students and also promotes socialization in the respective subject (Göpferich 2016). [35] This is also proven by studies on co-teaching in the field of literacy. (Eriksson & Carlsson 2013) [36] or Bergman et. al. 2013) [37], which have shown a high learning success with students due to the combined mediation in specific teaching/learning contexts. The studies of the combined mediation of subject specific and rhetoric competences such as the study by Nespital, Gareis, Zirbes (2019) [38], in which the combined mediation of geographic subject specific teaching and presentation training with regards to the learning success were examined, confirm these findings.

The present study examines the effectiveness of the co-teaching concept ‘scientific presentation’ in the degree courses physics and material science. It follows the approach of the Scholarship of Teaching and Learning (SoTL) and the study of teaching and teaching effects in this specific subject area (Huber et. al. 2014) [39] and does not only contribute to German teaching circumstances but can be an internationally relevant contribution to the teaching practices in the natural scientific section of universities.

In cooperation with the Professorship for Theoretical Solid-State Physics during Winter Semester 2018/19, an extensive study with a larger number of participants (40 students of the degree courses physics or material science) was carried out. The aim was to evaluate the seminar to assess its effectiveness and efficacy. The results are described and analysed in the present study. The method chosen was a pre-and-post comparison in order to gauge the student’s rhetoric skills and speech anxiety symptoms, to not only identify a subjective assessment of the development of said factors, but also to determine factors that possibly influence symptoms of speech anxiety, as they correlate with the development of rhetoric skills (Nespital 2016). [40] Furthermore, the pre-post presentations were examined by the seminar leaders (physicists and speech scientists) using a newly validated catalogue of criteria for rhetoric assessment (Appendix 1), as well as video recordings shown to four external assessors (two speech scientists and two natural scientists). Additionally, possible connections between the results of the subjective self-assessment and the external assessment of the presentations were examined. The results of these assessments are presented and discussed in the third chapter.

2. The Teaching concept

The module ‘scientific presentation’ was implemented in the curricula of the degree

courses of material science and physics as a co-teaching concept after a pilot study carried out in the material science degree course during the Winter Semester 2016/17. This study indicated that by combining the subject specific contents with rhetorical training subjects, students could reach significant learning effects. The module consists of 15 sessions, which are outlined in figure 1. The seminar starts with a training on basic rhetoric principles at the beginning of the seminar. This includes criteria for a good presentation, the analysis of self-perception and external perception, situation analysis, feedback and rhetorical exercises (for example to learn structured arguing or to face the audience with the individual correct body language etc.). Further, during the course of the seminar individual rhetoric exercise recommendations that complement and reinforce the learning effects are accessible to the students at all times (Nespital & Heiliger 2019). [41]

Further, the teaching concept includes a first and a second presentation for every student, both of which were filmed. By holding two presentations, the goal was for the students to improve both the content-related as well as the rhetorical aspects. While the second presentation deals with a current subject specific topic in the respective field, the first presentation is comprised of scientific and subject specific basics. Thereby, students can deal with their topic on a substantial level throughout the semester and can gain an understanding of it from a basic level to the specifics. While the first presentation is treated as a speech training, the second presentation includes a grade evaluation, which consists of 30 percent rhetorical evaluation. Simultaneously, by using the video feedback and the feedback provided by the audience after both talks, the students have the chance to put their self and external perception into context with that from the group and the speech science lecturer who gives feedback on rhetorical communicative criteria (for example ‘The presenter speaks freely’), body language (for example ‘The presenter avoids eye contact with the audience’), speech structure (for example ‘The main argumentation of the presentation is always recognizable’) and layout of the slides (for example ‘The graphics are clear and understandable’).

Through this combination of subject specific and non-subject-related competences, the students are given the opportunity to not only improve their knowledge through subject-specific feedback from the first presentation to the second, but also to learn the criteria for a rhetorically sound presentation through the speech science lecturer. This approach has the advantage that students can train their rhetoric skills while dealing with topics with high subject specific knowledge requirements that they will need in their later professional field.

In summary, the aim of the seminar is for all students to reflect on their rhetorical strengths and weaknesses, as well as their subject specific knowledge.

They can then improve rhetorically and professionally by taking the feedback and methods they were provided with into account.

As a learning objective, at the seminar all students should be capable of

- moving from a non-reflected and involuntary manner of presenting, to a free and sovereign presentation practice that is, in a speech scientific sense, listener-friendly.

- providing criteria-led feedback for other presentations and accepting it for their own presentations.

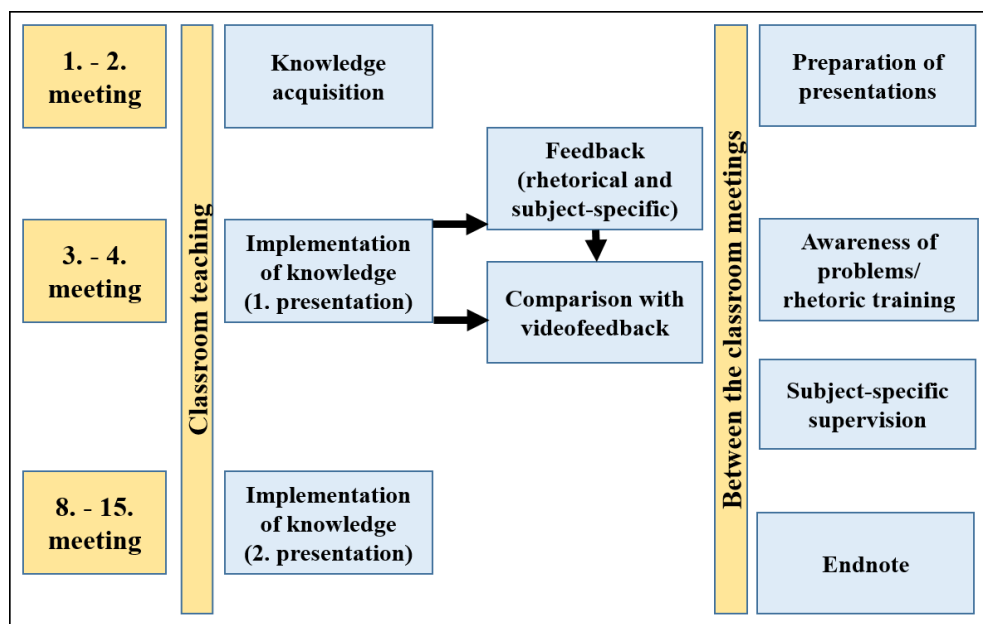


Fig. 1: Structure and process of the module “scientific presentation”

3. Hypothesis, Structure and Methodology

Hypothesis

The aim of this research study was to analyse and to determine the effectiveness of the teaching concept in order to optimise it. This led to the following hypothesis:

1. The students improve their presentation skills due to the effects of the feedback and knowledge transfer in their rhetoric capabilities. This should be improved with a pre-post-measure of self-assessment and a pre-post-measure of the assessment by lecturers and external assessors. We define an improvement if the rating on the scale in the second presentation is higher than in the first presentation.
2. Students reduce their speech anxiety and gain self-confidence when speaking in public with help of the training and feedback. This hypothesis is based on study results by Nespital 2016 [42], which showed

a correlation to the improvement of their rhetorical capabilities. There is a reduction if the rating on the scale after the second presentation is lower than before the first presentation.

Structure

The modules carried out as compulsory courses in the winter semester 2018/19 offered the opportunity to examine the effectiveness of the teaching model with regard to the structure and linking of rhetorical content in a subject-specific context using a larger body of participants. All in all, the authors evaluated 40 students in their 3rd year of university studies. Their ages were not recorded and are not of interest for the present study. Further, the study did not take the student's gender into account. For all of the subjects there are declarations of consent.

Based on a pilot study carried out in the winter semester 2016/17 with ten students in their fifth semester of material science (Nespital & Heiliger 2019) [43] whose results were used to optimise the teaching concept, the research was carried out in three parallel seminars, two of which took place in the degree course of physics and one in material science. As discussed in section 2 the seminar was comprised of 15 compulsory lessons, each 90 minutes long. The students had to give two 20-minute-long presentations: one at the beginning and one at the end of the seminar (see figure 1). Both presentations were recorded with a video camera.

The video recordings of the presentations and the student questionnaires at the beginning and at the end of each seminar were used as data material. The questionnaire recorded the subjective self-evaluation of their own rhetorical skills and speech anxiety symptoms. In order to identify a possible development during the course of the seminar and to be able to correlate this self-evaluation to the actual performance (evaluation through external assessors) these questionnaires were filled out by the students before the first and after the second presentation. The presentations were assessed by the seminar co-lecturers (a professor for theoretical physics and a speech scientist), and the video evaluations from external assessors (two speech scientists and two natural scientists) on the basis of a catalogue of criteria validated in the course of the study, aimed at the rhetoric capabilities of the presenters (see chapter 3.4.1.). While both lecturers were aware of the pre-and-post presentations, the external assessors were not informed in order to obtain an objective assessment of the student's rhetoric skills. Furthermore, possible commonalities or differences between the assessment of the speech scientists as studied experts for rhetoric, and natural sciences scientists as experts for natural scientific subject areas but laypeople in the field of rhetoric, should be investigated. Not only the development of the assessment as a whole, but also the development of every single test person was analysed in this context.

Data Evaluation

In order to analyse the data, the t-test for paired samples (ANOVA) was used, as it also complies with the determined significance level, even when a normal distribution is not given (Bortz-Schuster 2010: 126). [44] The data was tested with a significance level of $\alpha < 0.05$. This describes the probability determined by the researcher with which the rejection of the null hypothesis leads to a type-1 error within the framework of a significance test (ibid., 11). The p-value partially represented in the figures describes the results of the significance tests for the examination of the null hypothesis set up beforehand. If the p-value is smaller than the significance value ($p < 0.05$), the results are statistically significant. With a value of $p < 0.1$, it is referred to as a trend, not a significance. A result is not significant, as long as $p > 0.1$ is present. The standard error was also taken into account and is shown in the figures. The standard deviation of the mean value distribution is referred to as a standard error of the means (Bortz-Schuster 2010). [45] The 95% confidence interval (abbreviated as CI) is used to determine the accuracy of the respective mean. ‘Areas in which there are population parameters that are considered to be the "generators" of an empirically determined sample parameter with a certain probability are called confidence intervals, according to Neyman (1937)’ (Bortz-Schuster 2010). [46] When confidence intervals (represented as error bars) overlap, one speaks of a non-significant result. If there is no overlap, a significant result is probable. Furthermore, factor analyses were carried out in order to check individual variables of the categories for possible internal consistency (Cronbachs Alpha α). In case of a high internal consistency the variables could be summarised into a single variable. In particular, if α is larger than 0.9 the consistency is excellent. If α is between 0.8 and 0.9 the consistency is high or good and if α is between 0.7 and 0.8 it is still acceptable. However, if α is below 0.7 it is not possible to use only a single variable for a certain category. ‘The higher the variables correlate with each other, the more similar the information they collect, i.e. the measurement of one variable largely makes the measurement of the other variables superfluous with high variable intercorrelations.’ (Bortz-Schuster 2010). [47]

Methods and Material

Test Development of the Rhetoric Skills Assessment Form

A test development was carried out in order to create the questionnaire for laypeople, based on the instrument by Wagner (Wagner 2004) [48] that was transferred to a valid questionnaire for Rhetorical Communicative Criteria, Body Language, and Speech Structure. The first criterion, ‘Rhetorical Communicative Criteria’ refers to the way of speaking during the presentation. The category ‘Body Language’ refers to the gestures and facial expressions the speaker makes during the presentation. The third criterion ‘Speech Structure’ refers to the order of the presentation, for example, the facts included, whether the listener could follow

the content and if there was an introduction and a conclusion with a take-home message.

The factor analysis (Bortz & Schuster 2010) [49] showed an acceptable to good internal consistency: The Cronbachs Alpha of the nine items subject to 'Rhetorical Communicative Criteria' showed a acceptable internal consistency ($\alpha=0.796$) so that the items could be summarised as one criterion. The criterion 'Rhetorical Communicative Criteria' comprised nine items which were rated on a scale from 1 ('never') to 5 ('always'). Furthermore, the eleven items in the category 'Body Language' showed a good internal consistency ($\alpha=0.848$) and could be summarised. The criterion 'Speech Structure' includes nine items and also showed a good internal consistency ($\alpha=0.830$). The final catalogue of criteria for the assessment of the rhetorical component of the presentations is given in appendix 1 and comprises a total of three categories, each with good internal consistency and have a scale from one to five.

Test Development for Speech Anxiety

After a two-month long validation process of the speech anxiety questionnaire according to Bartholomay & Houlihan (2016) [50], which was initially translated from English to German, the questionnaire showed to be clearly one-dimensional. The order was changed so that the negatively poled items alternated which was not the case in the original version. The second factor analysis showed that the reviewed version, which was tested on 14 people showed to be clearly one-dimensional. The item 'I am focused on what I am saying during my speech' presented a negative selectivity and was therefore removed from the questionnaire. The Cronbachs-Alpha with a rate of $\alpha=0.951$ and 16 items showed a high consistency. The query on speech anxiety took place at three different points in time: at the beginning of the seminar, after the first presentation, and after the second presentation.

Questionnaire on the Subjective Self-Assessment of Rhetoric Skills

The previously validated assessment questionnaire (Nespital/Heiliger 2019) [51] was used to query the subjective assessment of the development of the individual's rhetorical skills. On a scale from 1 (never) to 7 (always) the students should answer how good or bad they would assess their rhetoric skills. After reversing the negative items of which all 13 showed a acceptable internal consistency (Cronbachs Alpha ($\alpha=0.79$)) they were summarised to form the indicator 'Rhetoric Abilities'.

4. Results

Rhetoric Skills

The subjective self-assessment indicator 'rhetoric abilities' was assessed by the students at three different times. The results presented in figure 2 show a

significant improvement ($p=0.01$) of this indicator between the beginning of the seminar and after all students gave their first presentation. A further slightly increase of the indicator going to the end of the seminar was not significant ($p<0.57$), which can be also seen by the overlapping error bars.

From these findings it can be concluded that the students assessed their rhetoric skills at the beginning of the seminar to be slightly above average and as being improved after the seminar. Thereby, the improvement (based on the defined value of development in hypothesis a.) was apparent especially between times one and two and therefore before and after the first presentation. It can be assumed that the observer- and video-feedback influenced the students' personal assessment. To which extent the personal assessment complied with the external assessment could not be objectively determined.

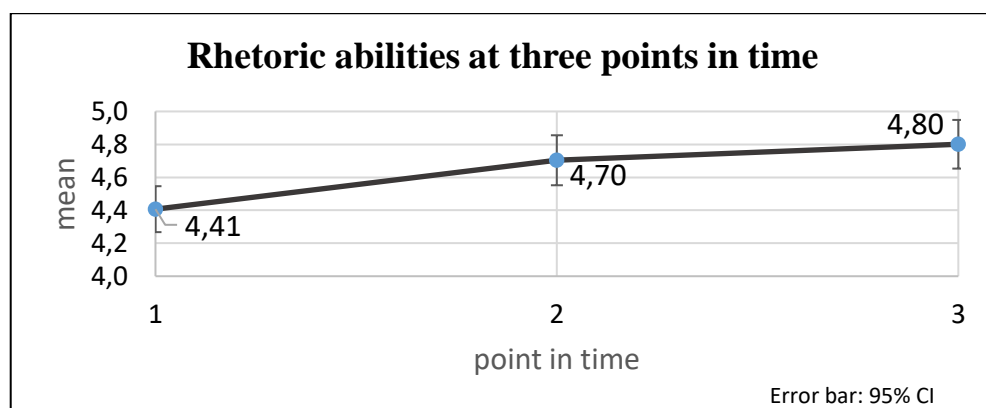


Fig. 2: Subjective self-assessed indicator 'Rhetoric abilities' at three points in time: The range of the indicator is from 1 to 7.

Speech Anxiety

As shown in the pilot study (Nespital & Heiliger, 2019) [52] students tend to rate their own speech anxiety as rather average. Thereby, on the scale from 1 (does not apply) to 4 (applies exactly) all results are between 'hardly applies' and 'partially applies'. A trend ($p=0.07$) towards the reduction of speech anxiety was visible between time one (average 2.45) and time two (average 2.30). No further significant reduction is observed between time two and three.

Taking these results into account, it can be concluded that the majority of students were less anxious to speak after their first presentation than before. It should be noted that the mean value in total on the scale from 1 (does not apply) to 4 (applies exactly) is in the mid-range. That their speech anxiety decreased only slightly between time two and three can be attributed to the exam situation and to the forthcoming grading. In addition, the possibility that students did not describe their speech anxiety accurately when filling in the questionnaire must be taken into account as well.

Overall Assessment of the Presentations

The results in figure 3 show that there are significant improvements ($p < 0.05$) (based on the value that was defined in hypothesis a) in all three categories ‘Rhetorical Communicative Criteria’, ‘Body Language’ and ‘Speech Structure’. It can be concluded that both the speech scientists and the natural scientists found the second presentations on average better than the first one in terms of quality. By checking possible differences in their assessment, it was evident that the group of speech scientists had judged their performance slightly better than the group of natural scientists (not shown in the figure). However, the progress from the first to the second presentation had been rated very similarly (see Fig. 3).

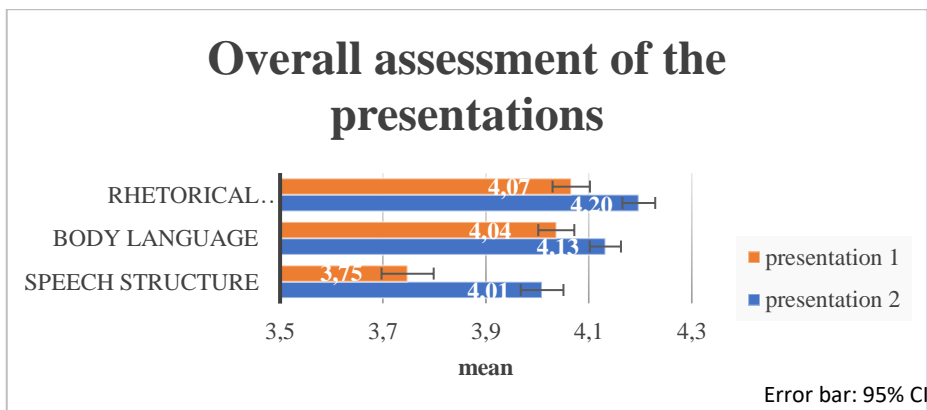


Fig. 3: Overall assessment of the first and second presentations for three different categories. The range of the indicators are from 1 to 5.

Individual Assessment of the Presentations

In order to draw conclusions about individual improvement, the assessments of the individual students were analysed. Fig. 4 shows one example for the development of the individual students (each of them assigned to a concrete number) from the first to the second presentation. In doing so, all six assessors were included. The study's design intended that the video assessors were not to be made aware whether the presentation was a student's first or second, but despite this 15 of the 40 students announced their presentation as the follow up in their introduction. However, the order of the presentations was deliberately chosen with large intervals between the first and second, so that the assessors could not make a direct comparison. The students of material sciences and the physics students were divided into three groups. Attention must be paid to the fact that four test persons (numbers 24, 25, 27 and 39) could not be assessed with the help of a video analysis because they did not consent to being filmed. Therefore, these developments (also graphically noticeable in the error bars) can only be assessed by taking into account that they were only evaluated by lecturers present at the time of their presentations.

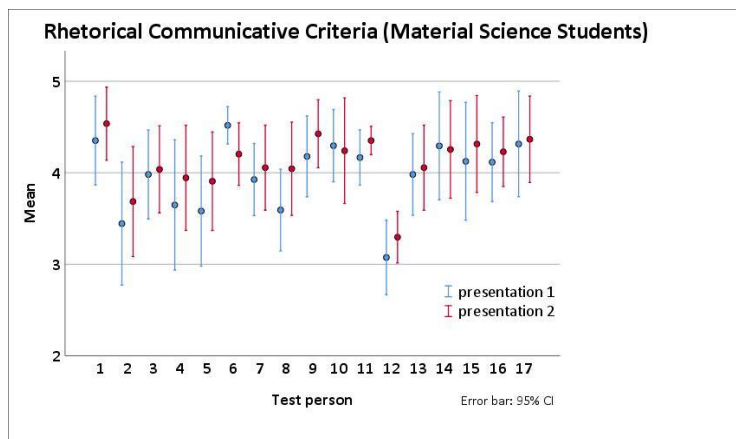


Fig. 4: Individual Assessment of “Rhetorical Communicative Criteria” (Material Science Students) for first presentation and for the second presentation. The range of the indicator is from 1 to 5.

In general, there is no obvious difference between the material science and physics students. Most of the students improved from their first to their second presentation. Some did worse, and a few remained on the same level. In particular, in the category ‘Rhetorical Communicative Criteria’ 31 students out of the 40 improved (based on the defined value of development in hypothesis a.) and 9 students did worse. Thus, more than one third of the students improved their rhetorical skills with respect to the communicative criteria. Reasons for this could be the feedback and the resulting reflection and/or the rhetoric training between both presentations.

For the category ‘Body Language’ the case is slightly different. Here, only 24 students improved whereas 15 students did worse, and one student remained at the same level. One plausible reason why 15 students did worse in their second presentation is that this presentation was graded. Consequently, the students were more nervous compared to their first presentation. In particular, body language can reflect speech anxiety and long training periods targeting breathing, posture and voice would be necessary to control physical reactions of speech anxiety.

In the category ‘Speech Structure’ 26 students were assessed better, 13 students were assessed worse, and one student was unchanged between the second and first presentation. This category is especially affected by the interaction with the professional mentors that hand out the topic and are available to answer scientific questions and discussing which results should be presented. Thus, the rather formal criteria of this category are directly affected by the mentoring. This is in particular the case for the second presentation. It turned out that about ten students never consulted their mentors. Consequently, it is very likely that these students performed worse in their second presentation. However, we cannot

prove this fact, because we have no gathered information about which student consulted the mentor. Therefore, this statement is just a reasonable speculation.

5. Summery and discussion

The results of the study as well as the experience of the lecturers show that the teaching concept is successful. It is important to note that this seminar is compulsory and prior to this seminar almost none of the students from the degree courses material science or physics had attended an additive course based solely on rhetoric. Due to the fact that the seminar is compulsory it was not possible to have a control group, which is a weakness of the present study. Nevertheless, the individual results as well as the summarised results are promising and the co-teaching concept was successful in this case. However, we are not able to answer the question if a solely additive course on rhetoric skills will lead to higher achievements. Published studies in the area of academic literacy suggest that this is not the case and that a research field related content is more effective (Jacobs, 2007 a, b [53], [54]; Gustafson et al., 2011 [55]; Eriksson & Carlsson, 2013 [56]; Bergmann et al., 2013). [57] Again, to prove that for our case a control group that attends an additive rhetorical seminar would be necessary. This is not possible due to the inclusion of the seminar within the curriculum. Besides the presented study that was carried out by the authors there is also a regular evaluation carried out by the university. Thereby, the results of this evaluation of the seminar did not only contain positive feedback by the students. For instance, some students reported that they did not watch the recording of the presentation that had been sent to them via email and that they had only done so after several requests by the lecturers. The video feedback is a precondition for the self-reflection of the students, in addition to the lectures feedback. Because of its importance for the improvement of one's presentation style, the seminar will be adjusted in regard to this component. In the optimised teaching concept there will be a greater focus on rhetoric feedback and the students will be even more involved in giving constructive feedback. Therefore, the duration of the first presentation will be reduced to 10 minutes, while the time for the assessor and video feedback will remain at 20 minutes. For the feedback the students will be divided into three feedback groups according to the criteria acquired in the first seminar, namely 'Rhetorical Communicative Criteria', 'Body Language', 'Speech Structure' and 'Layout of Slides'. After the talk the students are given 10 minutes time to prepare and structure their feedback while the presenter can watch the recording of the presentation in an adjoining room. In the subsequent 10-minute feedback round the student has a first comparison between their self- and external perception and has the opportunity to express their own view. Subsequently, the feedback groups can give their structured rhetoric feedback to the presenter. The speech science lecturer can then give additional feedback and give notice for additional exercises. A further problem arose regarding the varying handling of the

subject specific mentors who were responsible for advising the students on literature and requirements of the respective presentation topics. This became evident especially in physics and had not been discernible in advance. This mainly affected the tasks of the subject specific lecturers, e.g. the extent of support during the preparation of the presentation or the level of difficulty of the topic. This issue emerges from the evaluations (free text comments) and verbal feedback and will be adjusted as follows: Each subject specific mentor will be instructed beforehand with the help of a handout containing criteria with clear instructions for the supervision. The lecturers with subject specific knowledge of the respective topics are intended to intensify their supervision.

This should be implemented by giving detailed instructions in regard to the level of difficulty of the chosen research topic, and by listening to both presentations in order to be able to give feedback on the first presentation and to direct the discussion after the second presentation with the help of prepared questions. In addition, the mentors will receive clear guidelines to help minimise differences in the students' conditions. Because the second presentation involves the examination of performance in which expert knowledge as well as the rhetorical implementation of the presentation are examined, this is expected to continue to last twenty minutes plus an additional ten minutes of questioning, mainly by the subject specific mentor. Furthermore, feedback on the student's rhetoric skills will be given immediately after the second presentation, similar to after the first presentation. While the presenter is watching the video and the feedback groups are consulting, the co-lecturers and their advisors have a time slot of 10 minutes to assess the content as well as the rhetoric skills. Here, the student has the opportunity to watch parts of the video recording to gain a first impression of the external assessment. Because these changes take up a large part of the seminar's time, the speech, voice- and rhetoric training offered to the seminar groups during the course of the seminar will be set as a voluntary offer. Thus, the students to whom this feedback training was recommended or who are keen to improve their abilities can be trained more individually and therefore more efficiently. Moreover, the motivation of these students could be increased by offering this training outside of the seminar.

Appendix: Rhetoric Criteria for the Assessment of Presentations

1. Rhetorical Communicative Criteria

Please rate the following statements.	never	rarely	occasionally	often	always
The presenter ...					
...speaks freely.					
... uses an appropriate wording.					
... speaks long-windedly.					
... uses many filler words.					

... speaks clearly.					
... speaks monotonously.					
... makes inappropriate pauses.					
... speaks at an adequate volume.					
... speaks at a suitable rate.					

1. Body Language

... makes nervous movements.					
... avoids eye contact with the audience.					
... positions him/herself appropriately in the room.					
... has a confident posture.					
... seems motivated.					
... moves around the room too much.					
... is facing the audience					
... beathes calmly.					
... has an appropriate facial expression.					
... overgesticulates.					
... has a tense body posture.					

3. Speech Structure

	Not applicable	Not particularly applicable	Applicable in parts	Rather applicable	Applicable
The introduction of the presentation arouses curiosity.					
The question posed in the introduction is clear.					
The main argumentation of the presentation is always recognizable.					
Suitable examples are incorporated.					
The main part of the presentation appears unstructured.					
The speech contains a conclusion.					
The presenter ends his/her presentation abruptly.					
The key words used are suitable.					
The presenter establishes an appropriate connection between the slides and the audience.					

References and Notes

- [1] Feuerbacher, B. (2013). *Professionell Präsentieren in den Natur- und Ingenieurwissenschaften*. 2. Aufl. Wiley-VCH-Verlag, 4.
- [2] Feuerbacher, B. (2013). *Professionell Präsentieren in den Natur- und Ingenieurwissenschaften*. 2. Aufl. Wiley-VCH-Verlag, 4–5.
- [3] Ebel, H. F., & Bliefert, C. (2005). *Vortragen in Naturwissenschaft, Technik und Medizin*. (3rd ed.). Weinheim: VCH-Verlag, 8f.
- [4] Edwards, J. (2007). *Presentation Skill*. Chandni Chowk, Delhi. Global Media, 4.
- [5] Ebel, H. F., & Bliefert, C. (2005). *Vortragen in Naturwissenschaft, Technik und Medizin*. (3rd ed.). Weinheim: VCH-Verlag, 5.
- [6] Piaget, J. (1980). The psychogenesis of knowledge and its epistemological significance. In M. Piatelli-Palmarini. (Ed.), *Language and learning*. Cambridge, MA: Harvard University Press., 23–34.
- [7] Bada, S. O. (2015). Constructivism Learning Theory: A Paradigm for Teaching and Learning. *IOSR Journal of Research & Method in Education Volume 5, Issue 6 Ver. I*, 66.
- [8] Ebel, H. F., & Bliefert, C. (2005). *Vortragen in Naturwissenschaft, Technik und Medizin*. (3rd ed.). Weinheim: VCH-Verlag.
- [9] Bandura, A. (1977). Self-efficacy: Toward a Unifying Theory of Behavioral Change. *Psychological Review*. 84 (2), 191–215. doi:10.1037/0033-295x.84.2.191. PMID 847061.
Bandura, A. (1995). *Self-efficacy in Changing Societies*. New York: Cambridge University Press.
Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W H Freeman & Times Books/ Henry Holt & Co.
- [10] Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, 28(2), 132.
- [11] Tarr-Krüger, I. (1993). *Lampenfieber. Ursachen, Wirkung, Therapie*. Stuttgart: Kreuz-Verlag.
- [12] Beushausen, U. (2017). *Sicher und frei reden*. 4. Aufl. München u.a.: Ernst Reinhardt.
Craig, J. L. (2013). *Integrating Writing Strategies in EFL/ESL University Contexts: A Writing-Across-the-Curriculum Approach*. New York, London: Routledge, 24.
- [13] Goberman, A. M., Hughes, S., & Haydock, T. (2011). Acoustic characteristics of public speaking: Anxiety and practice effects. *Speech communication*, 53(6), 867–876.
- [14] Daly, J. A., Vangelisti, A. L., & Weber, D. J. (1995). Speech anxiety affects how people prepare speeches: A protocol analysis of the preparation processes of speakers. *Communications Monographs*, 62(4), 383–397.
- [15] Chemers, M. M., Hu, L. T., & Garcia, B. F. (2001). Academic self-efficacy and first year college student performance and adjustment. *Journal of Educational psychology*, 93(1), 55–64.
- [16] Slembek, E., & Geissner, H. (2001). *Feedback. Das Selbstbild im Spiegel der Fremdbilder*. (2nd ed.). Röhrig Universitätsverlag, 257.
- [17] Wagner, R. (2004). *Grundlagen der mündlichen Kommunikation*. (9th ed.). bvs, 17.

- [18] Meyer, D. (2013): Rede. In Bose, I., Hirschfeld, U., Neuber, B., & Stock, E. (Hrsg.), Einführung in die Sprechwissenschaft. *Phonetik, Rhetorik, Sprechkunst*. Tübingen: Narr Francke Attempo, 108–109.
- [19] Meyer, W. U. (1984). *Das Konzept von der eigenen Begabung*. Bern u.a.: Huber.
- [20] Festinger, L. (1954). Motivations leading to social behavior. In M. R. Jones (Ed.), *Nebraska symposium on motivation* (pp. 191–219). Lincoln: University of Nebraska Press.
- [21] Meyer, W. U. (1984). *Das Konzept von der eigenen Begabung*. Bern u.a.: Huber., 25–26.
- [22] Jones, S. C. (1973). Self- and interpersonal evaluations: Esteem theories versus consistency theories. *Psychological Bulletin*, 79, 185–199.
- [23] Shrauger, J. S. (1975). Responses to evaluation as a function of initial self-perceptions. *Psychological Bulletin*, 82, 581–596.
- [24] Meyer, W. U. (1984). *Das Konzept von der eigenen Begabung*. Bern u.a.: Huber., 27–28.
- [25] Arsenian, J. (1942). Review of The Social Life of a Modern community. Yankee City Series. Vol. One. [Review of the book The Social Life of a Modern community. Yankee City Series. Volume One. W. L. Warner & P. S. Lunt], *The Journal of Abnormal and Social Psychology*, 37(3), 412–413. <http://dx.doi.org/10.1037/h0051817>.
- [26] Meyer, W. U. (1984). *Das Konzept von der eigenen Begabung*. Bern u.a.: Huber., 28–30.
- [27] Mabe, P. A., & West, S. G. (1982). Validity of self-evaluation of ability: A review and meta-analysis. *Journal of Applied Psychology*, 67(3), 280–296. <http://dx.doi.org/10.1037/0021-9010.67.3.280>
- [28] Meyer, W. U. (1984). *Das Konzept von der eigenen Begabung*. Bern u.a.: Huber., 31–33.
- [29] Meyer, W. U. (1984). *Das Konzept von der eigenen Begabung*. Bern u.a.: Huber., 34–35.
- [30] Meyer, W. U. (1984). *Das Konzept von der eigenen Begabung*. Bern u.a.: Huber., 157.
- [31] Sun, J., & Vazire, S. (2019). Do People Know What They're Like in the Moment? *Psychological Science*, Vol. 30(3), 405–414.
- [32] Trautmann, M., & Sacher, J. (2010). Videofeedback als Instrument zur Unterrichtsentwicklung – Begründungen, Konzepte, offene Fragen In: M. Trautmann, & J. Sacher. (Eds.) *Unterrichtsentwicklung durch Videofeedback – Besser kommunizieren lernen*. Vandenhoeck & Ruprecht GmbH & Co. KG, 13.
- [33] Craig, J. L. (2013). *Integrating Writing Strategies in EFL/ESL University Contexts: A Writing-Across-the-Curriculum Approach*. New York, London: Routledge, 155.
- [34] Siebert, H. (1997). *Grundlagen der Weiterbildung. Didaktisches Handeln in der Erwachsenenbildung. Didaktik aus konstruktivistischer Sicht*. 2.Aufl. Neuwied a.o.: Luchterhand.
- [35] Göpferich, S. E. (2016). Writing Centres as the Driving Force of Programme Development: From Add-on Writing Courses to Content and Literacy Integrated Teaching. *Journal of Academic Writing*, 1(1), 41–56.

- [36] Eriksson, A., & Carlsson, C. (2013). From Apprenticeship Genres to Academic Literacy: Problematising Students' and Teachers' Perceptions of Communication Activities in an ICL Environment. *Journal of Academic Writing*, 3(1), 67–83.
- [37] Bergmann, B., Eriksson, A., Blennow, J., Groot, J., & Hammarström, T. (2013). Reflections on an Integrated Content and Language Project-Based Design of a Technical Communication Course for Electrical Engineering Students. *Journal of Academic Writing*, Vol.3, No.1, 1–14.
- [38] Nespital, U., Gareis, P., & Zirbes, L. (2019). Didaktische Entwicklung des Co-Teaching-Moduls „Moderationstraining bei Geographie-Studierenden“. *die Hochschullehre. Zeitschrift für Studium und Lehre*. <http://www.hochschullehre.org/?p=1372>. Retrieved on 05.12.2023.
- [39] Huber, L. (2014). Scholarship of Teaching and Learning: Konzept, Geschichte, Formen, Entwicklungsaufgaben. In Huber, L./Pilniok, A./Sethe, R./Szczyrba, B. & Vogel, M. (Hrsg.). *Forschendes Lehren im eigenen Fach. Scholarship of Teaching and Learning in Beispielen*. Bielefeld: Bertelsmann, 19–36.
- [40] Nespital, U. (2016). Wie effektiv sind Rhetorikkurse?. Erste Ergebnisse zur Entwicklung von rhetorischen Fähigkeiten und Sprehangtsymptomen bei Studierenden. *Sprechen. Zeitschrift für Sprechwissenschaft, Sprechpädagogik, Sprechtherapie, Sprechkunst* 61, 56–66.
- [41] Nespital, U., & Heiliger, C. (2019): Rhetorik in den Naturwissenschaften – Ergebnisse eines Co-Teaching-Lehrkonzepts. In: Kipp, K. H. & Speer, M.: *Sprache und Sprechen. Sprechkultur. Band 50*. Baltmannsweiler: Schneider Verlag Hohengehren, 115–131.
- [42] Nespital, U. (2016). Wie effektiv sind Rhetorikkurse?. Erste Ergebnisse zur Entwicklung von rhetorischen Fähigkeiten und Sprehangtsymptomen bei Studierenden. *Sprechen. Zeitschrift für Sprechwissenschaft, Sprechpädagogik, Sprechtherapie, Sprechkunst* 61, 56–66.
- [43] Nespital, U., & Heiliger, C. (2019): Rhetorik in den Naturwissenschaften – Ergebnisse eines Co-Teaching-Lehrkonzepts. In: Kipp, K. H. & Speer, M.: *Sprache und Sprechen. Sprechkultur. Band 50*. Baltmannsweiler: Schneider Verlag Hohengehren, 115–131.
- [44] Bortz-Schuster. (2010). Statistik für Human- und Sozialwissenschaftler. 7. Aufl. Berlin u.a.: Springer, 126.
- [45] Bortz-Schuster. (2010). Statistik für Human- und Sozialwissenschaftler. 7. Aufl. Berlin u.a.: Springer, 85.
- [46] Bortz-Schuster. (2010). Statistik für Human- und Sozialwissenschaftler. 7. Aufl. Berlin u.a.: Springer, 93.
- [47] Bortz-Schuster. (2010). Statistik für Human- und Sozialwissenschaftler. 7. Aufl. Berlin u.a.: Springer, 368.
- [48] Wagner, R. (2004). *Grundlagen der mündlichen Kommunikation*. (9th ed.). bvs, 40–43.
- [49] Bortz & Schuster (2010). Statistik für Human- und Sozialwissenschaftler. 7. Aufl. Berlin u.a.: Springer, 286.
- [50] Bartholomay, E. M., & Houlihan, D. D. (2016). Public Speaking Anxiety Scale: Preliminary psychometric data and scale validation. *Personality and Individual Differences*, 94, 211–215. <https://doi.org/10.1016/j.paid.2016.01.026>.

- [51] Nespital, U., & Heiliger, C. (2019). Rhetorik in den Naturwissenschaften – Ergebnisse eines Co-Teaching-Lehrkonzepts. In: Kipp, K. H., & Speer, M.: *Sprache und Sprechen. Sprechkultur. Band 50*. Baltmannsweiler: Schneider Verlag Hohengehren, 115–131.
- [52] Nespital, U., & Heiliger, C. (2019). Rhetorik in den Naturwissenschaften – Ergebnisse eines Co-Teaching-Lehrkonzepts. In: Kipp, K. H., & Speer, M.: *Sprache und Sprechen. Sprechkultur. Band 50*. Baltmannsweiler: Schneider Verlag Hohengehren, 115–131.
- [53] Jacobs, C. (2007a). Towards a critical understanding of the teaching of disciplinespecific academic literacies: Making the tacit explicit. *Journal of Education 41*, 59–81. https://journals.co.za/doi/abs/10.10520/AJA0259479X_23. Retrieved on 05.12.2023.
- [54] Jacobs, C. (2007b). Mainstream academic literacy teaching: Implications for how academic development understands its work in higher education. *South Africa Journal of Higher Education, 21 (7)*, 870–881.
- [55] Gustafson, M., Eriksson, A., Räisänen, C., Stenberg, A., Jacobs, C., Wright, J., Wyrey-Birch, B., & Winberg, C. (2011). Collaborating for Content and Language Integrated Learning: The Situated Character of Faculty Collaboration and Student Learning. Across the Disciplines. *A Journal of Language, Learning and Academic Writing 8 (3)* <http://wac.colostate.edu/atd/clil/gustafssonetal.cfm>. Retrieved on 05.12.2023.
- [56] Eriksson, A., & Carlsson, C. (2013). From Apprenticeship Genres to Academic Literacy: Problematising Students' and Teachers' Perceptions of Communication Activities in an ICL Environment. *Journal of Academic Writing, 3(1)*, 67–83.
- [57] Bergmann, B., Eriksson, A., Blennow, J., Groot, J., & Hammarström, T. (2013). Reflections on an Integrated Content and Language Project-Based Design of a Technical Communication Course for Electrical Engineering Students. *Journal of Academic Writing, 3(1)*, 1–14.

Bibliography

- Arsenian, J. (1942). Review of The Social Life of a Modern community. Yankee City Series. Vol. One. [Review of the book *The Social Life of a Modern community. Yankee City Series. Volume One*. Warner, W. L., & Lunt, P. S.], *The Journal of Abnormal and Social Psychology, 37(3)*, 412–413. <http://dx.doi.org/10.1037/h0051817>.
- Bada, S. O. (2015). Constructivism Learning Theory: A Paradigm for Teaching and Learning. *IOSR Journal of Research & Method in Education Volume 5, Issue 6 Ver. I*, 66–70.
- Bandura, A. (1977). Self-efficacy: Toward a Unifying Theory of Behavioral Change. *Psychological Review, 84 (2)*, 191–215. doi:10.1037/0033-295x.84.2.191. PMID 847061.
- Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist, 28(2)*, 117–148.
- Bandura, A. (1995). *Self-efficacy in Changing Societies*. New York: Cambridge University Press.

- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W H Freeman & Times Books/ Henry Holt & Co.
- Bartholomay, E. M., & Houlihan, D. D. (2016). Public Speaking Anxiety Scale: Preliminary psychometric data and scale validation. *Personality and Individual Differences*, 94, 211–215. <https://doi.org/10.1016/j.paid.2016.01.026>.
- Bergmann, B., Eriksson, A., Blennow, J., Groot, J., & Hammarström, T. (2013). Reflections on an Integrated Content and Language Project-Based Design of a Technical Communication Course for Electrical Engineering Students. *Journal of Academic Writing*, 3(1), 1–14.
- Beushausen, U. (2017). *Sicher und frei reden*. 4. Aufl. München u.a.: Ernst Reinhardt.
- Craig, J. L. (2013). *Integrating Writing Strategies in EFL/ESL University Contexts: A Writing-Across-the-Curriculum Approach*. New York, London: Routledge.
- Chemers, M. M., Hu, L. T., & Garcia, B. F. (2001). Academic self-efficacy and first year college student performance and adjustment. *Journal of Educational psychology*, 93(1), 55–64.
- Daly, J. A., Vangelisti, A. L., & Weber, D. J. (1995). Speech anxiety affects how people prepare speeches: A protocol analysis of the preparation processes of speakers. *Communications Monographs*, 62(4), 383–397.
- Ebel, H. F., & Bliefert, C. (2005). *Vortragen in Naturwissenschaft, Technik und Medizin*. (3rd ed.). Weinheim: VCH-Verlag.
- Edwards, J. (2007). *Presentation Skill. Chandni Chowk, Delhi. Global Media*.
- Eriksson, A., & Carlsson, C. (2013). From Apprenticeship Genres to Academic Literacy: Problematising Students' and Teachers' Perceptions of Communication Activities in an ICL Environment. *Journal of Academic Writing*, 3(1), 67–83.
- Festinger, L. (1954). Motivations leading to social behavior. In M. R. Jones (Ed.), *Nebraska symposium on motivation* (pp. 191–219). Lincoln: University of Nebraska Press.
- Feuerbacher, B. (2013). *Professionell Präsentieren in den Natur- und Ingenieurwissenschaften*. Wiley-VCH-Verlag.
- Goberman, A. M., Hughes, S., & Haydock, T. (2011). Acoustic characteristics of public speaking: Anxiety and practice effects. *Speech communication*, 53(6), 867–876.
- Göpferich, S. E. (2016). Writing Centres as the Driving Force of Programme Development: From Add-on Writing Courses to Content and Literacy Integrated Teaching. *Journal of Academic Writing*, 1(1), 41–56.
- Gustafson, M., Eriksson, A., Räisänen, C., Stenberg, A., Jacobs, C., Wright, J., Wyrey-Birch, B., & Winberg, C. (2011). Collaborating for Content and Language Integrated Learning: The Situated Character of Faculty Collaboration and Student Learning. Across the Disciplines. *A Journal of Language, Learning and Academic Writing* 8 (3) <http://wac.colostate.edu/atd/clil/gustafssonetal.cfm>. Retrieved on 05.12.2023. Retrieved on 05.12.2023.
- Jacobs, C. (2007a). Towards a critical understanding of the teaching of disciplinespecific academic literacies: Making the tacit explicit. *Journal of Education* 41, 59–81. https://journals.co.za/doi/abs/10.10520/AJA0259479X_23. Retrieved on 05.12.2023.

- Jacobs, C. (2007b). Mainstream academic literacy teaching: Implications for how academic development understands its work in higher education. *South Africa Journal of Higher Education*, 21 (7), 870–881.
- Jones, S. C. (1973). Self- and interpersonal evaluations: Esteem theories versus consistency theories. *Psychological Bulletin*, 79, 185–199.
- Mabe, P. A., & West, S. G. (1982). Validity of self-evaluation of ability: A review and meta-analysis. *Journal of Applied Psychology*, 67(3), 280–296. <http://dx.doi.org/10.1037/0021-9010.67.3.280>
- Meyer, W. U. (1984). *Das Konzept von der eigenen Begabung*. Bern u.a.: Huber.
- Nespital, U. (2016). Wie effektiv sind Rhetorikkurse?. Erste Ergebnisse zur Entwicklung von rhetorischen Fähigkeiten und Sprechangstsymptomen bei Studierenden. *Sprechen. Zeitschrift für Sprechwissenschaft, Sprechpädagogik, Sprechtherapie, Sprechkunst* 61, 56–66.
- Nespital, U., Gareis, P., & Zirbes, L. (2019). Didaktische Entwicklung des Co-Teaching-Moduls „Moderationstraining bei Geographie-Studierenden“. *die Hochschullehre. Zeitschrift für Studium und Lehre*. <http://www.hochschullehre.org/?p=1372>. Retrieved on 05.12.2023.
- Nespital, U., & Heiliger, C. (2019): Rhetorik in den Naturwissenschaften – Ergebnisse eines Co-Teaching-Lehrkonzepts. In: Kipp, K. H. & Speer, M.: *Sprache und Sprechen. Sprechkultur. Band 50*. Baltmannsweiler: Schneider Verlag Hohengehren, 115–131.
- Meyer, D. (2016). Rede. In Bose, I., Hirschfeld, U., Neuber & B. Stock, E. (Eds.). *Einführung in die Sprechwissenschaft. Phonetik, Rhetorik, Sprechkunst*. (2nd ed.). Tübingen: Narr Francke Attempo, 108–111.
- Piaget, J. (1980). The psychogenesis of knowledge and its epistemological significance. In M. Piatelli-Palmarini. (Ed.), *Language and learning*. Cambridge, MA: Harvard University Press, 23–34.
- Shrauger, J. S. (1975). Responses to evaluation as a function of initial self-perceptions. *Psychological Bulletin*, 82, 581–596.
- Siebert, H. (1997). *Grundlagen der Weiterbildung. Didaktisches Handeln in der Erwachsenenbildung. Didaktik aus konstruktivistischer Sicht*. 2.Aufl. Neuwied a.o.: Luchterhand.
- Slembek, E. & Geissner, H. (2001). *Feedback. Das Selbstbild im Spiegel der Fremdbilder*. (2nd ed.). Röhrig Universitätsverlag.
- Sun, J., & Vazire, S. (2019). Do People Know What They're Like in the Moment? *Psychological Science*, Vol. 30(3), 405–414.
- Tarr-Krüger, I. (1993). *Lampenfieber. Ursachen, Wirkung, Therapie*. Stuttgart: Kreuz-Verlag.
- Trautmann, M. & Sacher, J. (2010). Videofeedback als Instrument zur Unterrichtsentwicklung – Begründungen, Konzepte, offene Fragen In: M. Trautmann & J. Sacher, (Eds.) *Unterrichtsentwicklung durch Videofeedback – Besser kommunizieren lernen*. Vandenhoeck & Ruprecht GmbH & Co. KG.
- Wagner, R. (2004). *Grundlagen der mündlichen Kommunikation*. (9th ed.). bvs.

Dr phil. Ulrike Nespital holds a doctorate in speech sciences and is a trained mediator. She has been a lecturer in rhetoric, voice and mediation at the Centre for Foreign Language and Professional Skills (ZfbK) at Justus Liebig University Giessen (JLU) since June 2012 and has been a research assistant for oral communication and conflict resolution since January 2021. Together with Prof Dr Christian Heiliger she was awarded the Hessian University Prize for Excellence in Teaching 2020 (3rd place, endowed with 15,000 euros) with the project “Rhetoric in the Natural Sciences”. Ulrike Nespital conducts argumentation, presentation and voice training for students, staff and lecturers (e.g. Karlsruhe Institute of Technology (KIT), Goethe University Frankfurt, Justus Liebig University Giessen) on a freelance basis.

Prof. Dr. rer. nat. Christian Heiliger holds a doctorate in physics. From 2008 until 2014 he was an assistant professor and since 2014 up to now he is a full professor for theoretical physics at Justus Liebig University Giessen (JLU). Together with Dr. Ulrike Nespital he was awarded the Hessian University Prize for Excellence in Teaching 2020 (3rd place, endowed with 15,000 euros) with the project “Rhetoric in the Natural Sciences”. Christian Heiliger conducts research in the field of material science. In teaching he is interested in combining natural science and speech science using co-teaching concepts in order to advance general skills for future scientists.

Manuscript was submitted: 05.12.2023.

Double Blind Peer Reviews: from 07.12.2023 till 10.01.2024.

Accepted: 11.01.2024.

Брой 58 на сп. „Реторика и комуникации“, януари 2024 г. се издава с финансовата помощ на Фонд „Научни изследвания“, договор № КП-06-НП5/65 от 08 декември 2023 г.

Issue 58 of the Rhetoric and Communications Journal (January 2024) is published with the financial support of the Scientific Research Fund, Contract No. KP-06-NP5/65 of December 08, 2023.